THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY.

VOL. XXV. SEPTEMBER, 1908. No. 9.

ORIGINAL ARTICLES.

AN EPIDEMIC OF PNEUMOCOCCUS CONJUNCTIVITIS. REMARKS ON ACUTE CONJUNCTIVITIS.

By Adolf Alt, M.D.,*
ST. LOUIS, MO.

Ever since I have regularly made microscopical examinations of the discharge in cases of conjunctivitis I have, like other observers, found that in St. Louis, as elsewhere, an acute conjunctivitis due to the pneumococcus is not so very rare. Yet, the cases I had occasion to observe before this spring seemed to be of a sporadic kind and never had the character of an epidemic infection, there being only comparatively few during a year and usually at the periods when influenza prevailed.

In the middle of January of the current year a mild case of acute conjunctivitis presented itself in my office the secretion of which contained no other germ but the pneumococcus. It was healed in 5 days. Two weeks later another case appeared which was more obstinate, in fact took 2 weeks to get well. After this almost every day brought cases of acute conjunctivitis due to the pneumococcus to my office and to the clinics with which I am connected, during the months of February, March, April and May, only a few in June and fewer in July. It was, however, not only in these cases of acute conjunctivitis that the pneumo-

*Read at the 13th annual meeting of the American Academy of Ophthalmology and Oto-Laryngology, held at Cleveland August 26th to 29th, 1908.

coccus seemed to be the only or most prevalent infectious microbe, even in old chronic cases of catarrhal conjunctivitis and in a number of cases of trachoma and follicular conjunctivitis the same was the case. In fact in the many hundred examinations of conjunctival secretions which I made during these months, it was indeed a rare occurrence, when I did not find the pneumococcus and often no other germ. I began to doubt the correctness of my observations, but my doubts were allayed by the statements of several able pathologists and biologists who told me that their experience was the same and that the so-called cases of influenza during this period of time proved mostly to be due to the pneumococcus.

It seems then that we had without a question during this spring and early summer an epidemic of pneumococcus infection and, what concerns *us* here, of *pneumococcus conjunctivitis* in St. Louis and its vicinity, for some of my cases came from towns in the neighborhood of our city. In fact the last few cases all came from towns lying west of St. Louis, so that it appeared as if the infection was spreading in that direction.

Not having observed such an epidemic before I was particularly interested not only in observing the cases, but also in following the microscopical changes of the character of the secretions and their contents during their treatment.

During the period mentioned I treated 76 cases in my office. They concerned patients of all ages.

In two instances three members of one family, two boys and the mother, and in two others a brother and sister of one family came under treatment, following each other at intervals of a few days. The other cases were not, as far as I know, followed by further infection in their families.

The infection always concerned both eyes, sometimes one was much more affected than the other, in some the second eye showed the effects of the infection only a few days after treatment was instituted.

In most of the cases the disease ran its course without causing any complications. In one case the conjunctivitis was followed by an abscess in the cornea, in one a lacrimal abscess made its appearance. In one case some phlyctænules appeared near the corneal margin and in one an ulceration took place in the skin of the lids at the nasal canthus and over the lacrimal sac. In one case the pneumococcus conjunctivitis appeared on lids suffering from chronic trachoma, the course of which was

apparently not influenced by this intercurrent disease. Small hæmorrhages in the bulbar conjunctiva occurred a number of times.

While all of these cases received the same treatment the duration of the affection was not at all uniform and varied between five days and several weeks. From this we must conclude that either some of the germs were less virulent than others or that the individuals infected reacted differently to one and the same germ.

It was surely not the difference in virulence alone which was the cause of this difference in duration of the disease, as the clinical picture and the symptoms produced by the pneumococcus also varied very greatly.

Axenfeld (in his Bacteriology in Ophthalmology, p. 164) gives the following description of the clinical appearance of pneumococcus conjunctivitis: "In most cases the picture of an acute catarrh is very rapidly developed and both eyes are quickly attacked one after the other. This catarrh may vary in duration and intensity; there are very severe cases, looking like a blennorrhœa with deep redness, great swelling and copious purulent secretion and again very mild and abortive ones in which the disease runs its course in a very few days. This shows that the clinical picture is not absolutely a characteristic one for the pneumococcus infection and that it may be clinically mistaken for other forms of infection. In spite of this when we consider the whole course of the disease we find a *relatively characteristic picture in many cases.*" The most characteristic feature in Axenfeld's opinion is the sudden and critical disappearance of all symptoms. My experiences tend to support his views on this point. When he, however, later on adds that the "typical" course of the pneumococcus infection is apparently more frequently observed during epidemics than in sporadic cases, my experience during this epidemic was not exactly of such a nature.

In my series of cases during this epidemic there were very few cases which could exactly be called typical. In fact what struck me most forcibly, was the variety of clinical pictures which I observed due to the same infection; not only that there were mild and severe cases, there were also cases which appeared like a chronic catarrhal conjunctivitis and several in which I felt sure from their clinical aspect that I had to deal with the angular conjunctivitis due to the diplobacillus of Morax-Axenfeld and, yet, they were pure pneumococcus infections.

In most cases the pneumococcus was the only microbe found and it appeared as in a pure culture. The capsule was frequently invisible; in some cases, however, it appeared well defined in the smears and in culture. Sometimes, there were a few staphylococci; in one case, an infant, there were colon bacilli and in another case numerous diplococci were found which I thought were dying or dead gonococci and the patient acknowledged just having had a gonorrhœa.

The cases seen in the clinics which were considerably more numerous than those in my private office, I could, of course, not follow up in the same manner as I did those in private practice.

The treatment in all cases consisted in frequent instillations of 25 per cent argyrol, lavages with saturated boracic acid solution and cold compresses.

During this epidemic I made one very disagreeable experience which, however, taught me a valuable lesson and which you will, perhaps, permit me here to relate somewhat in detail.

In the very beginning of the epidemic I made a cataract extraction on an old and feeble lady. She had been to my office a week previously and was apparently in good health. For 24 hours before the operation her eye was kept under the influence of corrosive sublimate and, in fact, prepared in the same way as I have all eyes prepared for operation. When I operated, her conjunctiva showed nothing particular. The extraction was followed by collapse of the cornea and the entrance of an air bubble into the anterior chamber. The same evening my left tonsil became painful and swollen and a smear specimen showed an abundance of pneumococci. On the second evening after the operation the patient complained of some pain in the eye which was slightly infected, but showed nothing further. When I again saw her the next morning the eye was bathed in pus, the wound lips yellow with pus and the anterior chamber almost full of pus. Both smears and culture proved an absolutely pure pneumococcus infection. In spite of all I did the eye was lost and I have been wondering ever since whether she infected me or I infected her, or whether we both got infected at the same time. Ever since, I have operated with a face veil and have had no further similar accident.

Gifford and a number of observers have proven the possibility of transmitting the pneumococcus infection from one conjunctival sac to another in an exactly scientific manner. Of course,

every epidemic of pneumococcus infection proves this fact conclusively. I may add, that during these months of pneumococcus epidemic I myself have contracted a pneumococcus conjunctivitis twice, the latter of which was followed by a number of styes, and that in spite of especial care to prevent infection. The time between these two infections was over two months, which, I think, precludes the idea that the second one was only a recrudescence of the first infection. Two of my patients, also, came a second time with a new infection. These facts prove that the first infection was not followed by a prolonged period of immunity, although Gifford's personal experience seems to point to a period of immunity of several weeks at least.

For a number of years different authors have endeavored to formulate definite typical clinical pictures caused by the several micro-organisms which produce a conjunctivitis, especially an acute one. From my experience and more especially from my experience during this recent pneumococcus epidemic, I cannot agree that this is possible. The clinical pictures vary so much with one and the same infectious agent that it is in almost every case of conjunctivitis impossible to say what micro-organism it is due to without a microscopical examination and often a culture test. Any one who makes these examinations in a methodical manner will, like myself, I am sure, be many times surprised at what he finds. Nor do I see wherein the advantage should lie in speaking of an acute conjunctivitis due to this micro-organism or that one, as interesting as it is from a scientific standpoint, since our methods of treatment are but little influenced by it. Silver salts are still the main agents to be relied upon in all forms of acute conjunctivitis, the only exception being the diplobacillus conjunctivitis in which zinc salts seem to be of greater value and which by many is not looked upon as an acute form.

Finally, I wish to call your attention to a staining material which for months I have used with the greatest satisfaction in making smear specimens of the conjunctival secretion in my office, before treating the patient. This is the Azur II of the Giemsa staining solution for treponema pallidum. The air dried smear being stained for 30 seconds with a drop of a 1:10,000 solution of this stain, the surplus is washed off and the specimen after having been dried again can at once be examined. This stain in the short time of a few minutes, gives a beautiful picture and a much clearer one than any other stain that I know of.

MEDICAL SOCIETIES.

PAPERS READ AT THE THIRTY-FIFTH MEETING OF THE GERMAN OPHTHALMOLOGICAL SOCIETY AT HEIDELBERG, AUGUST 5, 6 and 7, 1908.*

Reported by Privat Docent Dr. W. Stock, Freiburg.

Translated by Adolf Alt, M.D.

O. Schirmer (Strassburg). On the innervation of the tear gland. The author has made quantitative and qualitative examinations of the tears in 3 old cases of paralysis of the sympathetic and in three cases before and after the resection of the upper cervical ganglion. He also, stimulated the peripheral end of the sympathetic immediately after the resection with weak and medium strong induced currents. No secretion of tears could be produced in this way. The quantity and the composition of the tears were perfectly normal in the old cases of sympathetic nerve paralysis. In the recent cases, however, on reflex stimulation the quantity of tears was visibly smaller than before the operation, while the concentration of the tears was unaltered. From this we must conclude that, besides the facial, the sympathetic nerve, also, influences the lacrimal gland, and just as with the facial, it is not by its action on the bloodvessels, but by the innervation of the glandular cells that the secretion is influenced.

Von Michel (Berlin). On changes in the eye and its adnexa in cases of congenital neurofibroma of the facial skin.

The neurofibroma of the facial skin is found in three forms. (1) As angioneuroma (plexiform neuroma); (2) as fibroma molluscum; (3) as one-sided hypertrophy of the face. In all of these forms connective tissue proliferations are found which develop from the peri- and endoneurium of larger and smaller nerves in a fibroma-like manner. Furthermore, new connective tissue usually is found in the cutaneous and subcutaneous tissues in varying quantities.

This neurofibromatosis can appear as one-sided facial hypertrophy. All of the parts of the face may be hypertrophied, skin,

*Klinische Monatsblaetter fuer Augenhlk. August.

bones skeleton of the head, sometimes, also, the tongue; nodules may be found in the mucous membrane of the mouth; one tonsil may be enlarged. Sometimes enlargement of the heart, lungs and kidneys is encountered. Very often the upper lid is thickened. With this a one-sided buphthalmus may be associated.

Michel considers all these anomalies together as due to embryonic disturbances of the mesenchyma. The buphthalmus is a fibromatosis of the ciliary nerves; these altered ciliary nerves exert a pressure on the uvea and thus cause a disturbance in the bloodvessels which leads to the buphthalmus.

He concludes as follows:

1. The association of buphthalmus with neurofibromatosis is not accidental.

2. With one-sided neurofibromatosis the buphthalmus may be wanting.

3. One-sided buphthalmus may be the only symptom of a one-sided facial hypertrophy.

M. von Hoffmann (Baden-Baden) reported a case of hereditary binocular glioma retinae, in a boy 1 year old, who as the first and thus far only child has inherited the disease or the tendency to it from the mother. The mother, now 28 years of age, had when 2 years old the right eye removed on account of glioma with good results.

Pfalz (Duesseldorf). On Corneal opacities and visual acuity.

Thus far central visual acuity has always been used when measuring the bad effect of corneal opacities or the improving effect of therapeutic measures or a spontaneous improvement; to judge, in the reverse way, from the size, kind and locality of an opacity as to its influence on the function, has thus far not been practical. The author has for years collected drawings of all corneal opacities and has found that the condition of the surface of an opacity is much more important than its density, size or situation. Ophthalmometer and keratometer assist the drawings. Observations made during many years lead the author to the following conclusions: The bad effect on vision of a corneal opacity is not so much due to its light dispersing action, as to its irregular "fascetted" light refraction, not only within the opacity itself, but, also, in its clear surroundings. The opacity does not in practice possess the general disturbing effect, which is in theory attributed to it even for the normal eye.

When it is disturbing, its surface is very irregularly curved. We must assume as the causes for this an irregular distribution of lymph and irregular deposition within the corneal parenchyma and epithelium which may persist for many years, especially in dyscrasic corneæ, as the expression of a reaction which has not yet fully disappeared, but in traumatic opacities, also, may for several years badly influence the curvature of the clear part of the cornea. This may without treatment even disappear in a few years, and thus with a marked clearing up and diminution in size of the opacity, sight may become better again. This is important as to time and extent of tatooing. The author does not believe Schmidt-Rimpler's idea to be correct who (*Deutsche Med. Wochenschr.*, 1904, No. 48,) attributed an especially bad influence to the strong illumination of the peripheral parts of the retina as compared with the deep shadow on the centre, and believes that purely physiological optical laws apply to the diminution of the visual acuity. He showed some photographs made with partially opacified lenses. The following are his conclusions: (1) Superficial corneal opacities which do not penetrate materially deeper than Bowman's membrane leave when all signs of reaction have disappeared the curvature totally intact or nearly so, and, if they cover no more than one-fifth of the pupillary area, they do not markedly influence the central visual acuity. (2) Larger opacities of the same nature reduce vision, yet, as long as one-fifth of the pupillary area remains clear and curved regularly, the visual acuity does not, as a rule, sink below one-half to one-third. (3) Even with stationary dense opacities if one-fifth of the pupillary area is clear and the astigmatism is regular the visual acuity seldom falls below one-fifth to one-fourth. (4) In cases of total opacity when in the erect image the papilla and bloodvessels can still be differentiated and the curvature of the surface is regular, we can expect a visual acuity of one-tenth and more, sufficient to allow of good binocular vision.

Von Rohr (Jena). The theory of anastigmatic cataract lenses; and E. Hertel (Jena). The use of anastigmatic cataract lenses. These two papers refer to new anastigmatic lenses introduced by von Rohr which give a much larger field. They are made by G. Zeiss, Jena. While at present rather heavy, it will be soon possible to make them lighter.

Levinsohn (Berlin). The important point in the production of

myopia. The author showed at first that there is no actual proof for the increase of tension during near work as assumed by the supporters of the most important theories on myopia and that the anatomical conditions found in myopia are in direct opposition to such a view. He pointed out that in near work not only the accommodation and convergence but, also, the bending of the head by gravity exerts an important influence on the eye. First, because it fills the orbit with an excess of blood which presses the eye downward, and then through the weight acting directly on the eyeball. The essayist showed curves and manometric measurements analyzing these forces separately. Moreover, the pressure of the overfilled and distended fat cushion on the posterior pole causes trophic disturbances which produce softening of the tissues at this place. He states that this influence of gravity acts at first on the temporal side of the optic nerve entrance and that the staphyloma, the enlargement of the intervaginal space and the elongation of the axis are its natural consequences. In the same way he explains the ruptures in the pigment epithelium layer and the lamina vitrea, the detachment of the vitreous body and of the retina. Granted that bending down of trunk and head are the main factors in producing myopia, an energetic campaign against this evil must be looked upon as the only successful manner in which to fight the beginning and progress of myopia.

Zur Nedden (Bonn). Experiments concerning the specific relations between retina and kidneys.

When crushed rabbit's kidneys are injected under a dog's skin antibodies are formed against rabbit's kidneys which are retained in his blood. This antikidney serum or nephrotoxin, however, affects besides the kidneys, also the liver and the brain; these latter, however, much less than the kidneys. This proves at any rate, that liver and brain contain albuminoid substances which are to some extent identical with those in the kidneys, because immunity reactions are always specific ones.

If the nephrotoxic serum is injected into the vein of the ear, a kidney disease is set up which usually kills in a short time. Clinically the eyes show nothing pathological.

When, however, the nephrotoxic serum is injected into the common carotid and thus comes in contact with the tissues of the eye in larger quantities, after two hours bluish white, superficial foci are seen in the retina which grow rapidly and reach their maximum development in 6 to 8 hours.

The animals usually die on the second day from the kidney disease. One rabbit remained alive. In this case the retinal foci were changed in 10 to 14 days to white, glistening foci of degeneration between which some pigment was seen here and there.

A microscopical examination made at the earliest stage, that is 7 hours after the nephrotoxin injection, showed that the affection was situated exclusively in the innermost layers of the retina. There an albumenoid fluid had collected which pressed the supporting fibres apart and thus produced characteristic pictures as of preformed cavities. The nervefibres, ganglion and glia cells appeared normal. Nowhere inflammations were found, nor changes in the bloodvessel walls. Such alterations developed secondarily only.

In experiments with normal dog serum nothing pathological could be found in the kidneys or retina. The serum which is toxic for rabbits' kidneys, acts as a toxin only on rabbits' retina, the retinæ of guinea pigs are not affected by it. The action of nephrotoxin on the retina is, therefore, a specific one.

Since the anti-kidney serum contains antibodies against the retina, it is clear that an intimate relation exists between kidneys and retina, that is, that albumin groups of the same kind are existent in both.

The author showed (1) a rabbit with an ophthalmoscopically easily demonstrable endogenous retinal affection produced by anti-kidney serum (4 months old).

(2) A microscopical section of an endogenous retinal affection 7 hours after the injection of anti-kidney serum in a rabbit.

(3) A miscroscopical section of a fresh kidney disease produced in a rabbit by nephrotoxin. (Necrosis of the epithelium of the renal canaliculi.)

W. Uhthoff (Breslau). Operation for cataract in diabetics.

The author reported a series of 115 cataract operations in diabetics, the detailed statistics of which he had Kitamura report recently in the *Klin. Monatsbl f. Augenhlk.*, XLVI, 1908.

He discussed the older opinions on cataract operations in diabetics in detail and showed what a change of opinion has occurred under the influence of antiseptics and asepsis especially as to the prognosis.

The most frequent complications are inflammatory symptoms in the iris, as could a priori be expected from the known predisposition to inflammatory processes of diabetic tissues, due

to their lessened power of resistance and the increased virulence of micro-organisms in diabetes. He referred to the surgical experiences and experimental researches of Bugwid, Grossmann, Hildebrandt, Sweit and others.

He then detailed other complications, as retinal hæmorrhages, retinitis diabetica, etc., none of which proved deleterious.

He, also, discussed the antidiabetic management of the patient before and after the operation. He opposes a too vigorous procedure in this direction.

The method of operation does not differ from that in non-diabetic subjects and Uhthoff has of late quite frequently operated without iridectomy, and followed it by the instillation of one drop of a ½% sterile solution of eserine. He considers this an effective guard against post-operative prolapse of the iris without interfering with the healing of the wound.

E. von Hippel. Palliative trepanation in cases of choked disc. Based on 221 cases reported in literature of trepanation in cases of choked disc, the author comes to the following conclusions:

1. Trepanation removes in most cases the choked disc for a prolonged time or forever.

2. The chances of retaining or improving vision are good when an early operation is performed, bad when sight was already practically useless. In most cases the operation came too late.

3. The duration of life of the successfully trepanned, even with an undoubted tumor, is such that the operation is well worth the trouble.

4. The operation may not only remove the choked disc, but lead to a perfect cure, because even in cases with clinical tumor symptoms, there may really be present a chronic hydrocephalus or a pseudotumor (Nonne) or an acute or chronic swelling of brain tissue (Reichardt) or a serous meningitis. In such cases healing or blindness may result without operation.

5. The danger of the operation must not be underestimated; yet in cases in which the preservation of sight is at stake it is decidedly less than when we consider the mortality of all cases of a palliative trephining (according to Bergmann 47.7%).

6. The immediate danger of the operative procedure may be reduced by certain rules; chloroform, not ether; operation in two times, cocainization of the dura mater, prevention of rapid evacuation of fluids, immediate closure of the wound, avoiding osteoplastic methods in favor of simple trepanation.

7. A sufficient decrease of the intracranial pressure may in certain cases be brought about without opening the dura mater, in most cases this seems, however, to be necessary.

8. The brain hernia which in tumor cases is frequent, is necessary for the success, therefore it must not be counteracted, but its exuberance should be limited.

9. Whenever the tumor can with some probability be localized the trephining should be done in general in corresponednce with this locality, otherwise in the right parietal region.

10. It will be impossible always to avoid bad results and the family must be aware of this. In spite of this it is our duty when vision begins to fail on account of choked disk to advise operation.

11. Lumbal puncture may be taken into consideration as a therapeutic measure only when a tumor is improbable; ventricular puncture is of less value than trephining.

12. The general use of Neisser's diagnostic puncture will probably be of help when we desire to prevent blindness from choked disk.

R. Greef (Berlin). Further report on trachoma. The author described in detail how the trachoma bodies found by him appear and take up stains. They are absolutely identical with those found by Hallberstädter and Provazek in Java who called them chlamydozoa.

Greef showed in drawings the different stages of development of these bodies within epithelial cells, from the single granules surrounded by a light area which are often grouped together like diplococci to the smaller and larger form in aggregations, and of the cell filled altogether with these granules which finally bursts and spreads the granules in the neighborhood. Of late he has succeeded in staining the granules in sections and found that we can no longer speak of a purely epithelial disease, as Provazek does, since the granules are found deep in the follicles.

Krusius. The pathology of fusion.

The author reviewed the well known relations between fusion, amblyopia and strabismus and confirms the observations of Claud Worth regarding the amblyopia of strabotics and is early treatment.

As a therapeutic contribution he recommends, aside from atropin in the leading eye and the bandaging of this eye, and

in place of these methods, to correct the amblyopic eye up to emmetropia, but to render the leading eye artificially amblyopic. The leading eye must be made as amblyopic as the amblyopic eye was in comparison to it before the correction.

Finally he demonstrated a modified amblyoscope for fusion exercises which differs from the usual model in that it can be used for any pupillary distance and also in differences of height and divergence. A further important modification is that the image for each eye can be made to appear and disappear alternately.

He lays stress on such an arrangement in order to make fusion exercises in cases "of disturbance of fusion with inability to perceive at once contemporaneous visual impressions in the macular region of the retina."

Th. Leber (Heidelberg). The origin of detachment of the retina.

The essayist reports on results of recent researches concerning the pathological anatomical changes in the ordinary form of spontaneous detachment of the retina. He found his previously enunciated views confirmed, according to which the detachment is due to pulling from the interior. The acting force seems to be the contraction of a new formed cellulo-fibrous tissue on the inner surface of the retina and in the vitreous body.

He described the various and complicated structural changes and illustrated his remarks with numerous colored plates, made true to nature by Mr. Schroeter. Some of them were shown with the projection apparatus.

Lenx (Breslau). On the use of the anti-ferment treatment of purulent processes in ophthalmology.

The author reviewed in short the theoretical basis of the method, of the anti-ferment treatment of purulent processes, first recommended by Mueller and then first tried by Peiser in practical surgery. The melting of the tissues during acute inflammatory processes is caused mainly by a proteolytic ferment which is set free when polymorphonuclear leucocytes are broken up. The action of this ferment can be neutralized by an anti-ferment, which exists in blood serum and somewhat more plentifully in pathological exudates, for instance in ascites. With such an antiferment ascites to which a trace of chloroform was added the author has made a series of experiments at the University Eye Clinic at Breslau in order to determine its value.

Useful results were reached in cases of lid abscess and acute dacryophlegmon, especially when the tissue surrounding the lacrimal sac was broken down. The treatment was useless in chronic dacryo-cysto-blennorrhœa and in purulent conjunctivitis, especially in blennorrhœa. The causes of this uselessness the author sees in the fact that in the purulent processes the epithelium of the mucous membrane is preserved and thus prevents the anti-ferment from coming into direct contact with the inflamed tissue, as is absolutely necessary; furthermore, during purulent inflammations of mucous membranes a real proteolytic melting of the tissues does not take place.

In ulcerous processes of the cornea, especially in ulcus serpens a specific influence was not observed, probably, because the anti-ferment cannot reach the progressing infiltrated portion which is still covered by epithelium.

H. Happe (Freiburg). The non-septic serum therapy in eye infections.

Happe has made 100 inoculations with pneumococci and staphylococci into the vitreous body, anterior chamber and cornea of rabbits. Half of these animals had been fed with sterile yeast or been made immune by injections of Deutschmann's serum or diphtheria serum, the other half were not immunized and were treated with serum after the inoculation.

In order to make the dosis of the infection in the vitreous body, anterior chamber, and cornea in both animals as much alike as possible, minimal (1/200 cc.) but equal quantities of a salt solution containing the bacteria of a known quantity were injected by means of a very exact micro-syringe.

These experiments did not prove the fortunate effect which has been vouchsafed to Deutschmann's and the diphtheria serum, for which, therefore, the experimental basis is wanting.

He does not think that as concerns the clinic these experiments settle the question, but believes that his results speak against too optimistic expectations and invite a more critical reserve.

L. Schreiber and F. Wengler (Heidelberg). On experimental alterations in the retina.

The authors studied the influence of artificial increase of pressure on the retina and optic nerve. They brought into the anterior chamber of rabbits iron produced by electrolysis (Erdmann) which produced hypertonus by obliterating the iris angle;

this in turn led to a considerable increase in the size of the eyeball under the picture of a hydrophthalmus. Although the retina under the effect of the increased tension suffers from strong stretching (21%) and consequent decrease in thickness (6%) the degeneration of the ganglion cells and nerve fibres as seen in human hydrophthalmus does as a rule not appear. The retina, therefore, possesses a hitherto unknown great tolerance to a gradually increasing tension and a considerable faculty of being stretched.

If, however, immediately after the injection the hypertonus attains a very high degree and remains thus, a degeneration of the ganglion cells and nerve fibres is observed very early and was seen already after 22 days to ascend into even the optic tract of the other side. When the pressure is even the increase in the size of the eyeball and the accompanying stretching of the retina afford a comparative safety from degeneration.

The eye of the dog increases in size after an iron injection even more than that of the rabbit; however, the hypertonus does not produce hydrophthalmus but occlusion and seclusion of the pupil and loss of the anterior chamber, which is very quickly followed by detachment of the retina.

Furthermore, the authors tried to produce a secondary glaucoma by injecting concentrated scarlet oil into the anterior chamber of rabbits. The method was successful, but no better than the iron injection. Some remarkable effects of the scarlet oil on the retina were observed, namely, a disseminated atrophy especially of the external layers appearing after a few days, furthermore, vivid cell proliferation of the pigmented epithelial cells as well as of the ganglion cells. The ganglion cells wandered into the external retinal layers even in parts which had not become atrophied. Then an enormous hypertrophy of such misplaced ganglion cells and those in their proper location was noted, and finally, mitosis in numerous ganglion cells to varying degrees up to perfect cell-division. These mitotic cells had all the charactertistics of ganglion cells, the right size, well defined pericellular space and a long process in the direction of the nerve fibre layer.

Krauss (Marburg). On orbital plethysmography.

The author reports on a series of systematic plethysmographic examinations of the human orbit which was made on a large number of healthy individuals with an "air-tight eyecapsule" constructed by himself. His studies prove that this eyecapsule

is of almost unlimited usefulness. Its advantages for clinic and practice were described and its construction demonstrated on schematic cross-sections. The capsule permits of the easy application of the most varied remedial agents to the eye and lids, as he showed on many examples.

From the number of scientific experimental results on man (those on animals will be reported later) he selected some which were in direct relation with plethysmography of the orbit. Since this method presupposes a perfectly tight fit of the eyecapsule, it proves that his capsule remains continually tight and is very useful. On a table of curves he showed and explained the normal curve gained by experiment on adult healthy men. Thus far his experiments concerned the field of physiology and pathology of lid closure, secretion of tears, different movements of the eye, venous current from the orbit, vaso-motors of the orbital blood-vessels, etc.

Since the anterior wall of the capsule is transparent it is possible to observe the eye itself externally and internally. A proper lens inserted into the anterior wall of the capsule makes an ophthalmoscopic examination easier.

He showed how by this means a large series of new problems are opened up for the clinical and practical study, to awake an interest in which was the chief desire of his communication.

Bielschowsky (Leipzig). On unusual symptoms in soul-blindness

The patient, who after a short attack of unconsciousness remained soul-blind, had with an almost complete optic asymboly an almost normal visual acuity in one, and V. 2/5 in the other eye (Ah). Although the examination of the visual field did not show any larger defects, as a rule he was conscious only of that part of an image which lay in the centre of the retina. It disappeared as soon as it reached eccentric parts of the retina, either by unconscious loss of central fixation or by moving the image by means of prisms. In consequence all eye movements were lacking which under normal circumstances take place automatically as the result of peripheral retinal stimulations, although the motor apparatus was intact and reacted promptly when the attention and with it the desire to fixate were so to speak forcibly drawn to the peripheral retinal image, as for instance when measuring the visual field. The orientation of the patient in space was greatly interfered with by the usual loss of topographical consciousness of the soul-blind and through the disturbance

in localization of depth unusual in the soul-blind. He judged the distance of objects which he saw much too small; he does not reach far enough, whilst when measuring a space by steps or by feeling an object he gives correct measurements. Together with the undervaluation of distance he has an undervaluation of the size of objects (micropsia) and pseudo-movements appear when he tries to grasp a fixated object.

These symptoms which are not usual with soul-blindness have been occasionally observed in lesions of the occipital and parietal lobe, and also in blind born individuals in the time immediately following a successful operation. They illustrate and complete our views of processes in the sphere of vision which are as yet so full of gaps.

A. Vogt (Aarau). The cause and character of erythropsia due to dazzling.

The author gives the results of his experiments made with electrical incandescent and sun light.

1. Contrary to the hitherto held opinion erythropsia is not rare, but in low intensity one of the most frequent physiological phænomena which, so to speak, influences in a high degree everybody's color perception. Every strong source of light, especially diffuse sun light reflected from a white surface, after an influence of a few minutes causes changes in our color perception which must be looked upon as erythropsia. On account of their frequency our retina has become so accustomed to these changes that we are conscious of them only when we shield one eye from the light and thus can use it as a controller. The eye having been exposed to the light for a few minutes sees the colors different from the non-exposed one. All colors have an addition of rose or purple.

Yellow becomes red yellow, dark brown red brown, gray reddish gray, white pale rose, etc. Very dark objects are covered by a greenish veil. The differences are easiest of observation when the examination is made with diminished illumination.

Very bright light covers the differences to some extent. The erythropsia lasts for from one to several minutes, according to the intensity of the previous or subsequent illumination. It increases with the former and remains the longer the lower the latter is.

This physiological phænomenon of erythropsia which at first sight seems to contradict a specific sense energy, influences our faculty to recognize colors to a very high degree.

2. Of the many theories on erythropsia, that of Fuchs because gained by experiment thus far demanded recognition. The following experiment of Vogt, however, refutes it:

Having produced erythropsia all the light entering the eye is by means of appropriate apparatus and a solution of erioviridin freed of all red rays. In spite of this the erythropsia persists. It can, therefore, not be due to the perception of the visual purple, as Fuchs thought, for like any other not selfluminous body the visual purple in order to be perceived as red needs red rays.

3. Vogt's experiments on the after-image show (1) the red after-image in light lasts longer if the fixation of the light source was more prolonged. (2) The red after-image, when light is excluded increases at first with longer fixation, comes then to a standstill in time and finally is shortened.

At the same time the after-image is changed thus that finally the green perception predominates.

According to Vogt's experiments the erythropsia is nothing else than the phase of the so-called after-image caused by dazzling. The predomination of the red in the after-image of the white surface as described long ago by Plateau, Fechner, Wegener and Helmholtz may be looked upon as an early stage of erythropsia. If the duration of fixation and the intensity of the source of light are gradually increased, the red vision is gradually increased and finally typical erythropsia takes the place of the other after-images.

The question as to the character of erythropsia is therefore identical with that of the after-image. The curves constructed by Fechner and Wegener for the after-image of a white plane apply also to the after image with erythropsia.

4. Among the different rays the bluish green ones are most apt to produce erythropsia. It cannot, or with great difficulty only, be produced by red rays. After red dazzling, usually a light blue appears instead of erythropsia. This blue is evidently to be looked at as a component of purple, the spectral red of which is not perceived on account of over-tiring. With appropriate absorption (yellow glasses or solutions) Vogt could prove that the hitherto held view that the ultraviolet rays produce erythropsia, is incorrect.

5. Red-green blind individuals are made erythropes in a similar manner as individuals with normal sight.

They correctly state the perception of red. Iridectomy, atropinisation and aphakia predispose to erythropsia on account of

the greater quantity of light which enters the eye. With mydriasis this is forty times greater than with a normally wide pupil.

Vogt could, also, prove a certain individual disposition to erythropsia.

Roemer (Greifswald). Specific therapy in beginning senile cataract.

After long continued preparatory researches the author has now come to practical conclusions regarding his theory of the origin of senile cataract. If this form of cataract results from the specific cytotoxic action of metabolic products upon the lens, we must first try to counteract the formation of the senile cataract by means of the lens tissue itself. According to his order the Hoechster Farbenwerke have produced an organic preparation from animal lenses which contains the component parts of animal lenses in an unaltered form. He has for months fed with this preparation 165 patients with different forms of senile cataract. Since the lens protoplasm of the mammals is of the same biochemic structure as in man, the cataractous organism is thus forced to assimilate the same organ which is cataractous in the eye. How does this influence the development of the cataract? He has found that cataracta punctata is not influenced. However, in cases of subcapsular cortical cataract and in such cases which are extremely frequent at Greifswald in which the punctate and the subscapsular forms are combined, vision was improved throughout. Undoubtedly certain changes in the visual acuity may cause mistakes, but in many cases the slow and certain increase in visual acuity was so pronounced, that this result cannot be simply laid to mistakes. There is a patent applied for for this remedy, but at present it remains in Roemer's hands until a longer experience has been gained with it.

Wolfrum (Leipzig). Researches as to the macula lutea of the higher mammals.

The foveal area in man is larger than that in the ape on account of the greater reduction in ganglion cells and the inner granular layer. The incurvation in the foveal area of the limitans externa towards the vitreous body is found in all the higher mammals, the elongation of the cones may reach double the norm in apes. The individual differences in thinness and the varying distances between the cones, which Fritsch has found in his extensive researches, are evidently produced after birth, as in the newly born the cones are still very thick.

The development of the fovea begins in the human embryo at about the 7th month and is not finished at birth. It is natural that the development of the fovea, beginning so late, may sometimes not take place or stop at some time, while the remaining layers of the retina, especially the circumfoveal ones, may have progressed considerably further in their development. This may perhaps be an explanation of congenital amblyopia, especially when combined with nystagmus.

Stargardt (Strassburg). The pathology of dark-adaptation.

Stargardt has attempted to prove the existence of pathological processes in the formation of the visual purple for certain disturbances of dark-adaptation. Since according to the theory of Parinaud and others hemeralopia in icterus is thought to originate from the fact that salts retained in the blood dissolve the purple, rabbits were rendered icteric by ligation of the ductus choledochus and killed after dark-adaptation of various lengths of time.

The examination of the visual purple was made by comparing with the retina of a normal animal which had been kept in the dark for an equally long time. It was found that in an animal with the highest degree of icterus neither the quantity nor the rapidity of the formation of the visual purple was in any way interfered with.

Teich (Wien). Experiments on the behavior of animalic tissues within the vitreous body of animals.

Prompted by reports on experimental transmission of sympathetic ophthalmia by the implantation of pieces of tissue of especially infected eyes into animals' eyes, Teich has systematically examined the behavior of animalic tissues in the vitreous body on a large material (200 rabbits' eyes) at the Wuerzburg University Eye Clinic. The experiments, requiring a special technique, were made in the following manner: (1) Introduction of sterile, normal, homogenous (that is coming from a rabbit) pieces of tissue, as liver, spleen, kidney, muscle, brain, optic nerve, iris and ciliary body. (2) Introduction of sterile, normal, heterogenous pieces taken from man, calf, hog and dog. (3) Introduction of sterile tissue emulsions (liver, spleen, muscle, kidney, iris and ciliary body) by means of a specially constructed apparatus. (4) Introduction of inflammatory tissue. Half of

the material for introductions was at once put into bouillon and only those animals were further considered the controlling tissue of which remained sterile. The result of these experiments was as follows: Even perfectly sterile animal tissues when introduced into the vitreous body of a rabbit's eye, produced an inflammation, and according to the nature of the tissue they caused mostly a serous or sero-purulent inflammation. The implanted tissues were made innocuous just as in other parts of the body partly by removal by phagocytosis and partly by incapsulation, eventually by expulsion by way of a purulent exudate. Pathologic and inflamed tissue particles when introduced into the vitreous body caused a reaction analogous to that produced by sterile normal tissues. He never succeeded in producing a plastic iridocyclitis.

THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Meeting Friday, July 10th, 1908.

The President, Mr. Marcus Gunn, in the chair.

CARD SPECIMENS.

1. *Pathological Sections of a case of Pseudoglioma.*—Mr. W. H. H. Jessop.
2. *Professor Dimmer's Photographs of the Fundus Oculi.*—Mr. W. H. H. Jessop.

1. *A New Ophthalmoscope, which was a modification of Morton's.*—Mr. P. C. Bardsley.
2. *A modification of the Moorfields Trial Frame.*—Mr. P. C. Bardsley.
3. *A Needle Holder.*—Mr. P. C. Bardsley.

PAPER.

The Visual Fields in Pigmentary Degeneration of the Retina.—Mr. M. L. Hepburn.

Lantern slides of visual fields were shown illustrating the different forms found in primary and secondary pigmentary degeneration of the retina. The former is met with clinically as

retinitis pigmentosa and the latter is seen following chronic inflammatory disease of the choroid. The chief characteristics were pointed out, and indicated that a more or less definite type of field belonged to each variety.

The relationship of the visual field was discussed in regard to:—

1. The pigmentation present in the fundus.
2. The changes in the stroma and vessels of the choroid.
3. The retinal vessels.

The fields of vision demonstrated that the maximum defect in the primary degeneration was neither dependent on the amount of pigmentation nor on the severity of the choroidal disturbance, but upon the extent of interference with the flow of blood through the choriocapillaris; and, moreover, although cases of chronic choroiditis exhibit their own special type of field, whenever the pathological changes were of such a nature as to involve the bloodvessels, the type reverted to that found in primary degeneration.

On the whole the visual fields uphold the more generally recognized pathology of the cause of pigmentary degeneration of the retina, viz.: spasm or sclerosis of the vessel walls.

It was also pointed out that there was some evidence to show the possibility of the retinal circulation replacing the choroidal in the supply of the rods and cones, when the latter has been cut off by disease from maintaining the ordinary nutrition of that layer.

MALCOLM L. HEPBURN.

The American Academy of Ophthalmology and Oto-Laryngology held a very successful and enjoyable meeting at Cleveland, O., August 26th to 29th. The following officers were elected for the ensuing year:

President—Dr. O. J. Stein, Chicago.
First Vice-President—Dr. P. H. Fridenberg, New York.
Second Vice-President—Dr. W. B. Greene, Dayton, O.
Third Vice-President—Dr. C. Barck, St. Louis.
Secretary—Dr. C. F. Suker, Chicago.
Treasurer—Dr. S. H. Large, Cleveland, O.
Councilor—Dr. Y. W. Murphy, Cincinnati, O., and Dr. C. A. Wood, Chicago.

REVIEWS.

THE MUSCLES OF THE EYE. By Lucien Howe, M.D. Volume II. Physiology and Treatment Illustrated. New York, 1908. G. P. Putnam's Sons.

In the same scholarly and painstaking manner as in the first volume of this excellent manual the author takes up the subject of muscular pathology and its treatment. He has certainly been very successful in bringing some order into the hitherto rather chaotic state of the subject of heterophoria and strabismus by his logical arrangement and clear and concise description. The chapters on treatment are equally well written and complete and contain a number of improvements original with the author. An apparently very complete bibliography, a few interesting annexes and some biographic notes add to the usefulness of this book of which both author and publisher may well be proud.

PULSATING EXOPHTHALMOS, its etiology, symptomatology, pathogenesis and treatment—being an essay based upon an analysis of 69 case histories of this affection. By G. E. de Schweinitz, M.D., and T. B. Holloway, M.D. Philadelphia and London, 1908. W. B. Saunders Co. Price, $2.00.

This is a careful analysis of 69 cases hitherto not tabulated in literature of pulsating exophthalmus, with special consideration of the different surgical measures for its cure, including the orbital operations. The tables make very interesting reading. The book should be in every oculist's library.

OPHTHALMIC SURGERY. A handbook of surgical operations on the eyeball and its appendages as practiced at the clinic of Professor Hofrath Fuchs. By Dr. Josef Meller. The translation reviewed by W. L. Pyle, A.M., M.D. With 118 original illustrations. Philadelphia, 1908. P. Blakiston's Sons & Co. Price, $3.00.

This book is very interesting and instructive because it gives an account of the methods of operating as preferred by Professor Fuchs; but Dr. Meller has added, besides, some methods of his own. The book is very beautifully illustrated, except that in some illustrations a great deal more space is given to the unimportant parts of hands than to the main subject, the eye, which in our opinion should have been the reverse. The book is a very valuable one, especially on account of the very clear description of the different operations. ALT.

CORRESPONDENCE.

XI. INTERNATIONAL CONGRESS OF OPHTHALMOLOGY, NAPLES, 2ND-7TH APRIL, 1909.

Second Circular.—Honourable Colleague:—In repeating to you the invitation to take part in the International Ophthalmological Congress of Naples, we add—for the ophthalmologists who are occupied in questions concerning blindness and the betterment of the condition of the blind—that from March 30th until April 3rd, the International Congress of Typhlology will also be held in this city. The members of the Ophthalmological Congress will be invited to take part in the afternoon session, to discuss together the following official subject: "Whether it be advisable in the treatment of patients afflicted with diseases immediately conducive to blindness, to give them correct information as to the precarious condition of their sight and such instruction as may be necessary to them when blindness overtakes them."

The sittings of the Ophthalmological Congress will take place in the buildings of the Royal University of Naples, by kind permission of the Rector. The exhibition, in connection with the Congress, of objects appertaining to Ophthalmology, touching its practical as well as historical side, will be situated on the premises of the R. Clinica Oculistica in S. Andrea delle Dame.

In order to honor the memory of the Founder of the Eye Hospital of Naples, on the occasion of the Congress, the Presidency, from the remaining funds of the International Subscription of 1905 intended to commemorate the lamented Master, will assign six gold medals, each bearing the inscription of "Premio de Vincentiis" with the purpose of encouraging young students of ophthalmology, to the authors of the six most valuable as yet unpublished articles on the subject of ophthalmology. The latest date for the presentation of the articles, which should be typewritten, has been postponed until October 31st.

The authors are further recommended to send the registration fee nct later than January next, accompanied by a visiting card

with the exact address, for the careful addressing of the membership tickets and of the request for the reduction in the rates for the sea and rail travelling in Italy.

Members wishing to secure rooms in advance should apply to the Presidency of the Committee, not later than February, 1909, that they may obtain, during the time of the Congress, apartments, in the best hotels overlooking the sea in Naples and Posillipo.

Under the management of the Committee, an excursion will be arranged to Capri by steamer, visits to the Grotta Azzurra and Sorrento, to Pompeii and its excavations; and to Pozzuoli, with visits to the antiquities and the Solfatara.

In conclusion the members of the Congress will receive all necessary information concerning visits and excursions to the City and Suburbs, Museums, Vesuvius, etc., for which the Government and Municipality will show the utmost liberality, and private societies will offer greatest facilities.

Kindly accept, eminent colleague, the assurance of our most distinguished consideration.

For the Managing Committee
THE PRESIDENT,
PROF. A. ANGELUCCI.

Corresponding members for Great Britain:

Dr. Walter Jessop, London, W., 73 Harley Street.
Dr. George Mackay, Edinburgh, 20 Drumshead Gardens.
Sir Henry R. Swanzy, Dublin, 23 Merrion Square.

For United States of America:

Dr. Herman Knapp, New York, 26 West 40th Street.
Dr. G. E. de Schweinitz, Philadelphia, 1705 Walnut Street.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. Shoemaker, M.D.,

St. Louis, Mo.

HYGIENE OF THE EYE IN SCHOOL CHILDREN.

W. M. Carhart (*American Jour. of Obstetrics,* July) thus summarizes his paper:

1. The increase during late years in the number of children wearing glasses is due not to an increase in the number of weak or diseased eyes, so much as to the greater strain on the function of vision necessitated by our more extended use of the eyes for close work in the complex civilization of the present day.

2. The normal child is born hypermetropic and without astigmatism. The myopic child is either defective from birth or has acquired myopia from the stress of eyestrain through the "turnstile of astigmatism." Astigmatism is not congenital, but is practically always acquired in the normal child during the early years of life by excessive strain on the muscles of accommodation.

3. Kindergarten and primary work should be so arranged as to avoid strain on the muscles of accommodation of the eye in the plastic years of childhood. Hence, sewing and all weaving exercises should be limited in amount, if not absolutely eliminated.

4. Systematic study should be begun only when the delicate and soft tissues of the child's eyes have attained sufficient formation to resist distortion on moderate use of the accommodation. This means, that prolonged close work should not be allowed until the ages of 10 or over. A child beginning systematic study at that age will with suitable care, be able at 16 or 18 to acquire all the knowledge possible to its more precocious companion, and will have the inestimable advantages of normal eyes and healthy physique.

5. No young child should be encouraged to compete with its companions for prizes. Mental and ocular overstrain are the

inevitable results of such educational monstrosities. In the primary schools especially there should be no grading of the children.

6. A child incapable of the prolonged use of the eyes at the proper age should not be classed as culpably lazy. In the majority of cases there will be found uncorrected refractive error.

7. Inability to concentrate the mental attention, and deficient powers of observation are often caused by bad visual memory resulting from eyestrain.

8. The symptoms and physical signs of eyestrain in children can be easily recognized, and there is no more brilliant success in medicine than that which follows the correction in children of refractive overstrain.

OCULAR COMPLICATIONS OF PREGNANCY.

Hiram Woods (*Jr. A. M. A.*, July 18) gives the following summary of his most interesting and instructive paper:

Apart from the various nervous symptoms incidental to pregnancy, which often affect the eye functions, there are four serious ocular manifestations seen more or less frequently during pregnancy or after parturition. These are: (1) The so-called uremic blindness, which is usually seen in connection with eclampsia. (2) What has always been termed the albuminuric retinitis of pregnancy. These are the most common complications. Rarer forms are (3) loss of central or peripheral vision, due, so far as symptoms point, to a retrobulbar neuritis, and (4), a form of neuroretinitis, not essentially suggestive of the albuminuric type, but showing numerous retinal exudates and hemorrhages. The clinical symptoms of these conditions are reviewed, and the classes are studied from the standpoint of recent pathological investigations in the obstetrical field. There is, in view of these investigations, doubt as to whether the term uremic should be applied to the blindness occurring in connection with puerperal eclampsia. The same is true regarding the renal origin of what is termed the albuminuric retinitis of pregnancy. There is good reason to think that both the renal and ocular complications are manifestitations of the same process—a toxemia. The basis for this is set forth in the paper.

The third and fourth varieties of ocular complications of pregnancy are also, doubtless, the results of pregnancy toxemia, a toxic neuritis or toxic thrombosis probably being the active factor in causation.

LITTLE-KNOWN TYPE OF AMBLYOPIA IN CHILDREN.

S. Stephenson (*Brit. Med. Jour.*, July 18) reports a number of cases showing that permanent evidences of a previous attack of meningitis (or encephalitis) may be found in (1) incomplete optic atrophy, (2) nystagmus, and (3) paresis of one or more of the extrinsic ocular muscles, which may exist as single or grouped phenomena. Where incomplete optic atrophy exists, his observations are that it is as a rule bilateral. Inquiring into the previous history of these patients, frequently the physician is told that when an infant there had been a "cerebral" or "meningitic" illness with such symptoms as "fits," convulsions, headache, vomiting, constipation, retraction of the head, temporary paralysis, squint, unconsciousness, etc. That after recovering from the attack the patient was partially or totally blind, but that vision has since improved more or less. It is fair to conclude that an infantile meningitis or encephalitis had produced an optic papillitis, and that at least partial recovery had taken place from both the general and local condition. Hence the incomplete optic atrophy seen later by the ophthalmologist is to be considered as a sequel to a meningitic papillitis.

OPACIFICATION OF THE CORNEA FOLLOWING CATARACT EXTRACTION.

Vard H. Hulen (*Jour. A. M. A.*, July 25) reports a case of general opacification of the cornea following an uncomplicated cataract extraction. The patient had had a cataract removed from the other eye ten years previously which had been followed by the same condition. In response to questions sent to a large number of ophthalmologists thirty-nine cases of general, or complete opacification of the cornea following cataract extraction were reported. From the study of the cases reported and his own Hulen concludes that treatment is of but little or no avail and there is no indication at present known which enables us to determine beforehand when general opacification of the cornea may follow cataract extraction. Where such a result had followed in one eye he would favor some method other than extraction for the remaining cataract and thinks couching would be justifiable under such circumstances.

A BETTER PROGNOSIS IN PENETRATING WOUNDS OF THE EYEBALL.

John A. Donovan (*Jr. A. M. A.*, July 25) makes "a plea for the injured eye." He summarizes his paper thus:

1. Mild antiseptic cleansing—1 to 5,000 mercuric iodid (preferable), 1 to 2,000 mercuric cyanid or 1 to 5,000 mercuric bichlorid or saturated boric acid. Argyrol in special cases.

2. Remove all magnetic foreign bodies at once; also any or all that can be removed easier and safer now than later. Those remaining to be removed from time to time when the eye can most safely stand interference.

3. Enucleate at once only such eyes as have been totally destroyed. Even then it might often be better to wait till about the fourth day to avoid the possibility of any question arising later. Others should be cleaned, filled with salt solution if necessary, prolapsed iris replaced or cut off and got in the best possible condition.

4. Cauterize infected wounds; stitch when lids will not hold edges in apposition; use atropin and dionin, as indicated. Hot applications are always safe and usually preferable to cold.

5. Keep patient in bed at least a few days, longer if possible, remembering that detachment of retina may have occurred.

6. Never interfere with an eye until you feel reasonably certain you are now doing the best thing, and that this is the best time to do it; otherwise always wait.

MIGRAINE AN OCCUPATION NEUROSIS.

George Lincoln Walton (*Jr. A. M. A.*, July 18), in closing his paper offers the following conclusions:

Migraine is an occupation neurosis resulting, in individuals of neurotic inheritance, from over use, or use under the handicap of refractive error, of the parts concerned in vision.

It involves, like other occupation neuroses, disturbance of (1) sensory cerebral centers (those of vision in the occipital region); (2) motor cerebral centers (centers of divergence and convergence in the frontal lobe); and, (3) certain muscles (particularly the intrinsic and extrinsic muscles of the globe, the corrugator supercilii and the occipitofrontalis, and also the muscles which steady the head).

The pain of migraine is not necessarily intracranial, but is localized, in part at least, in the region of the muscles concerned, directly or indirectly, in vision.

AN INFREQUENT TYPE OF OPTIC NERVE ATROPHY.

Howard F. Hansell (*Jour. A. M. A.*, July 25) notes the fact that inflammation and atrophy of the optic nerve are nearly always secondary to some other disease or condition, by which the nutrition of the nerve is affected by changes in the circulation of the blood which supplies it. This may be brought about by some local condition causing pressure on the nerve, or extension of some inflammatory process from adjoining tissues, or by some general change in the nervous system, toxemia, or dyscrasia of the blood.

One of the most frequent cases of inflammation and atrophy of the optic nerve is disease of the sphenoidal and ethmoidal sinuses. The author believes this cause is overlooked too often and insists that repeated examinations of the sinuses be made, if necessary, before dismissing this as the cause of the trouble. Next to some local cause, tertiary syphilis easily takes first place. "The lesions may involve the dura mater, the piamater, the bones at the base of the skull, the blood-vessels and the nerves themselves, and consist of chronic inflammation with exudation, gummatous infiltration, gumma and disease of the vessels."

Hansell reports a case due to sinus disease and one due to tertiary syphilis. A point in differential diagnosis made by other writers is that in cases due to sinus disease there is usually a central scotoma if the case is seen early enough. Where the intracranial portion of the nerve is affected by tertiary syphilis of the surrounding tissues there may be great diminuation of vision but there is no central scotoma as a rule. This held true in the two cases reported.

A STUDY OF ONE HUNDRED REFRACTION CASES IN INDIANS FRESH FROM THE PLAINS.

Clarence Porter Jones (*Jr. A. M. A.*, July 25) reports the results of his examination of the Indian pupils admitted to the Hampton (Va.) Normal and Agricultural Institute. During a certain period out of 289 admissions 100 cases were found where the vision was below 20/20 or where there were some of the usual symptoms of eye strain, a percentage of 34.6, having refractive errors necessitating the wearing of glasses. These 100 cases were carefully examined under cycloplegia, with the systematic use of the ophthalmometer, ophthalmoscope, retinoscope, phorometer and test lenses. He says:

In these 100 cases—200 eyes—the refractive varieties found were as follows: Hyperopia, 38 eyes; simple hyperopic astigmatism, 26; compound hyperopic astigmatism, 60; myopia, 13 eyes; simple myopic astigmatism, 15; compound myopic astigmatism, 32; mixed astigmatism, 16.

The axis of hyperopic astigmatism was 90 degrees in 69 eyes. 180 degrees in 5, 45 or 135 degrees in 5, nearer vertical than horizontal in 13, and nearer horizontal than vertical in 6.

The myopic axis was 180 degrees in 38 eyes, 90 degrees in 4, 45 or 135 degrees in 4, nearer vertical than horizontal in 4, and nearer horizontal than vertical in 15.

Twenty states and territories are represented in the 289 admissions, 39 tribes, 26 in the series.

There are 3 cases of heterophoria amounting to as much as 2 degrees, no case being treated other than correcting the refractive error. No strabismus.

A marked tolerance for cycloplegics exists in the Indian. Scopolamin is not effective, being practically worthless. Homatropin 1/25 grain in each eye, applied by means of gelatin discs, is usually reliable; this dose was repeated in thirty minutes in about 10 per cent. of the cases. Atropin was necessary in 3 cases. A less than 2 per cent. solution of the latter was ineffective; also the strong solution of atropin was found necessary when its effect was desired in treating eye injuries of Indians occurring in the school work shops.

SOME CLINICAL ASPECTS OF LENTICULAR ASTIGMATISM.

Edgar S. Thomson (*Jour. A. M. A.*, July 25) emphasizes the importance of determining the amount of lenticular astigmatism as well as the amount of corneal astigmatism. This can be obtained by subtracting the amount of corneal astigmatism, as shown by the Javal and Schiotz ophthalmometer, from the total amount as obtained by retinoscopy or by the test with trial lenses.

Lenticular astigmatism may be either static or dynamic; most generally it is the latter and Thomson believes with Landolt and others that it is produced by partial contraction of the ciliary muscle. This he thinks accounts for the fact that .50 or .75 diopter less than the amount of corneal astigmatism as shown by the ophthalmometer is what usually is accepted by the patient, the partial contraction of the ciliary muscle having produced that amount of correcting lenticular astigmatism. He does not

think that dynamic lens astigmatism is produced to any extent by tilting of the lens, as, if it were, this could be accomplished in aged people where the lens is sclerosed. In point of fact the corneal astigmatism is corrected less and less by lenticular astigmatism as the patient gets older so that after the age of 50 there is little or no dynamic lens astigmatism. He refers to the experiments of Hensen and Voelckers which prove the possibility of a meridional contraction of the ciliary muscle. It is likely not possible for the dynamic astigmatism of the lens to exceed .50 or .75 of a diopter.

This form of lenticular astigmatism persisting may cause hypertrophy of the ciliary muscular fibres in meridian of contraction or it may cause a change in the shape of the lens which becomes permanent by the sclerosing of the lens. In such cases, usually in patients over 30 years of age who have never worn glasses, normal vision is obtained with a cylinder weaker than is indicated by the ophthalmometric measurements. In the treatment of every case the following factors should be considered: 1. Corneal astigmatism. 2. Lens astigmatism: a, static; b, dynamic. 3. The degree of compensation. 4. The factor in the error which is producing symptoms. The author takes up seriatum the different kinds and degrees of astigmatism but this part of his paper does not lend itself to abstraction.

EXAMINATION OF FUNDUS OF EYE BY TRANSILLUMINATION OF ORBIT FROM NASO-PHARYNX.

C. Hertzell (*Berliner Klinische Wochenschrift,* June 15) illuminates the orbit by placing his ophthalmodiaphanoscope in the back part of the mouth. This method reveals a number of conditions in the eyeball and in the orbit behind the globe which cannot be seen by the ordinary means of examination.